Platform Scientist Report for September 24, 2010

GH Platform Scientists: Scott Braun and Gary Wick

September 23-24, 2010

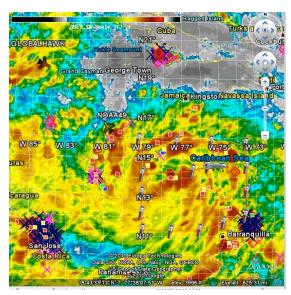
Takeoff: 16 UTC Sept. 23

Landing: 17 UTC Sept. 24

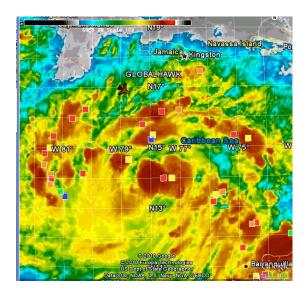
<u>Mission Objective</u>: This mission was the final one of a series of flights (by the DC8 and G-V) to observe the genesis of Tropical Storm Mathew. The storm had very slowly organized over the preceding 2-3 days. By the time of the GH flight, it had just reached tropical storm status. A convective burst (CB) began just prior to the GH getting on station, but was sustained throughout the flight. Mathew intensified by 5-10 kts during the flight, but was unable to intensify further because of relatively strong easterly vertical wind shear. The precipitation was concentrated on the western and southern sides throughout the flight.

The majority of the on-station time was spent making crosses over the CB and incipient eye by flying repeated butterfly patterns. The GH completed 3 butterfly patterns, the first with leg lengths of about 400 km and the second and third with lengths of about 300 km. The orientation of the legs was along headings of 180, 300, and  $60^{\circ}$ . After completion of the third butterfly, time allowed for a southward leg back to the precipitation region on the western side of the storm, followed by a northward leg along the same track back to the northwestern side of the storm.

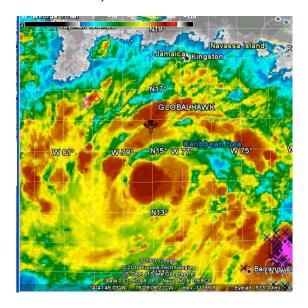
The series of screen captures below provide some information on the evolution of the storm during the flight.



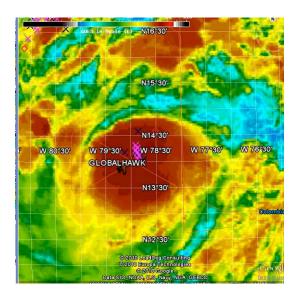
(Above) GH on approach to Matthew as the NOAA G-IV is departing. A small convective burst is beginning near 77.6°W, 14.2°N.



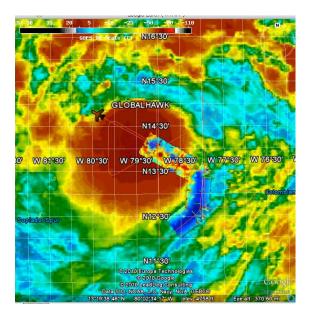
(Above) The GH on approach prior to turn south toward the rapidly growing CB near 78.0°W, 14.0°N.



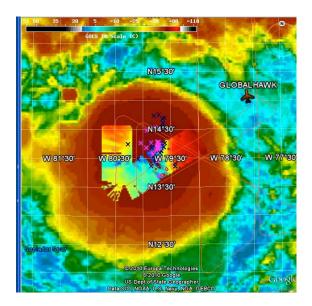
(Above) GH has begun the first N-S leg as the CB continues to grow.



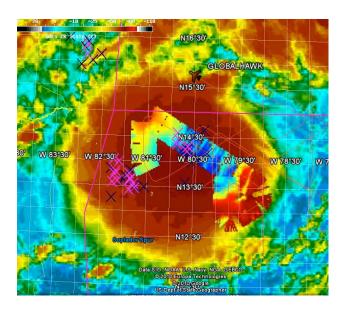
(Above) GH approaching active lightning area during first SW-NE pass (the third leg of the first butterfly pattern). HAMSR data was not available in RTMM up through this time.



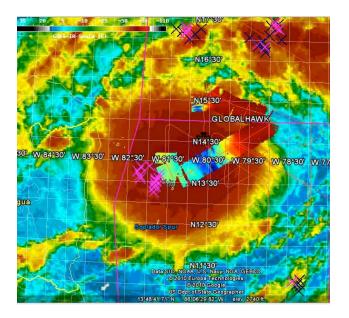
(Above) The GH is doing the second SE-NW pass. HAMSR data now available in RTMM. It suggests a possible center (blue area at NW end of HAMSR data; red area surrounding it may be precipitation in a nascent eyewall).



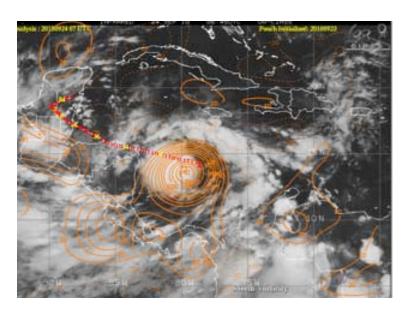
(Above) GH completing the second butterfly pattern after passing by a very active convective area.



(Above) HAMSR data suggests precipitation bands under cold cloud tops. NHC center is on east side of cloud shield, so precipitation is mostly downshear on west side of storm. The GH is about to begin a southward leg to resample this precipitation area.



(Above) The GH is heading south into precipitation area. The GH turns around and heads northward along the same track after moving south of  $14^{\circ}N$ .



(Above) CIMSS vorticity plot indicates a center near the eastern edge of cloud shield.